

Armed Forces College of Medicine

AFCM



Pathology of neoplastic skin lesions

By
Noha El Anwar
Ass. Professor of pathology


GOOD
morning

INTENDED LEARNING OBJECTIVES (ILO)



By the end of this lecture the student will be able to:

1. Describe pathology of neoplastic skin lesions
2. Compare between squamous cell carcinoma and basal cell carcinoma.
3. Classify types of melanocytic lesions.
4. Describe pathology of melanocytic lesions.
5. Compare the gross and microscopic features of benign and malignant melanocytic tumors.
6. Analyse the given clinical and laboratory findings to reach diagnosis of pathological conditions related to neoplastic skin lesions

Lecture Plan



1. Part 1 (5 min) classification of tumors of epidermis
2. Part 2 (35 min) Tumors of epidermis
3. Part 3 (5 min) Preneoplastic lesions of epidermis
4. Lecture Quiz (5 min)

Locally malignant tumors of the epidermis



Basal cell carcinoma (Rodent ulcer)

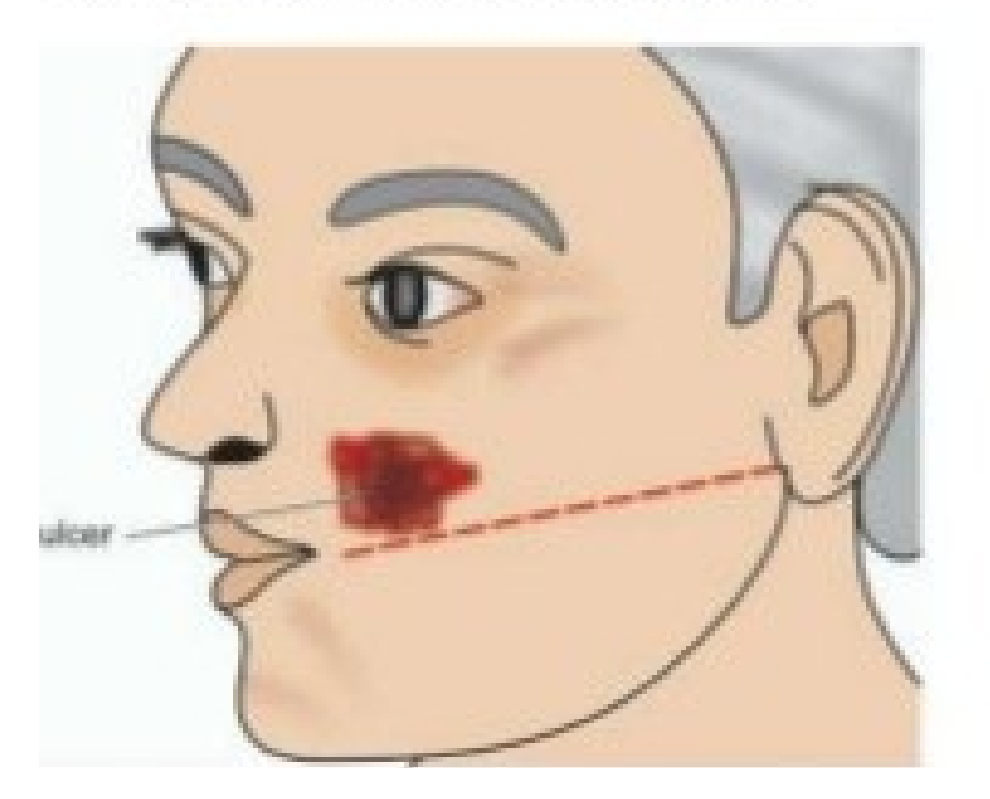
- Basal cell carcinoma (BCC) is **the most common human cancer** (1 million cases in the United States annually)
- Locally malignant tumor□ invades directly the surroundings
- Sun exposure is a risk factor
- Immunosuppression and defects in DNA repair (e.g., **xeroderma pigmentosum**) increase the incidence.

Locally malignant tumors of the epidermis



Basal cell carcinoma

- **Site**:
- It arises commonly the face above an imaginary line drawn between angle of the mouth & ear lobule.



Locally malignant tumors of the epidermis



Basal cell carcinoma

- **<u>Gross</u>**:

It starts as red nodule that ulcerate with **<u>rolled in edge</u>**s & **<u>raised beaded margin</u>**

A

Raised beaded rolled in edges

RU

https://www.mayoclinic.org/diseases-conditions/basal-cell-carcinoma/symptoms-causes/syc-20354187

https://studyhippo.com/dermatology-photos-and-descriptions/

Locally malignant tumors of the epidermis



Basal cell carcinoma

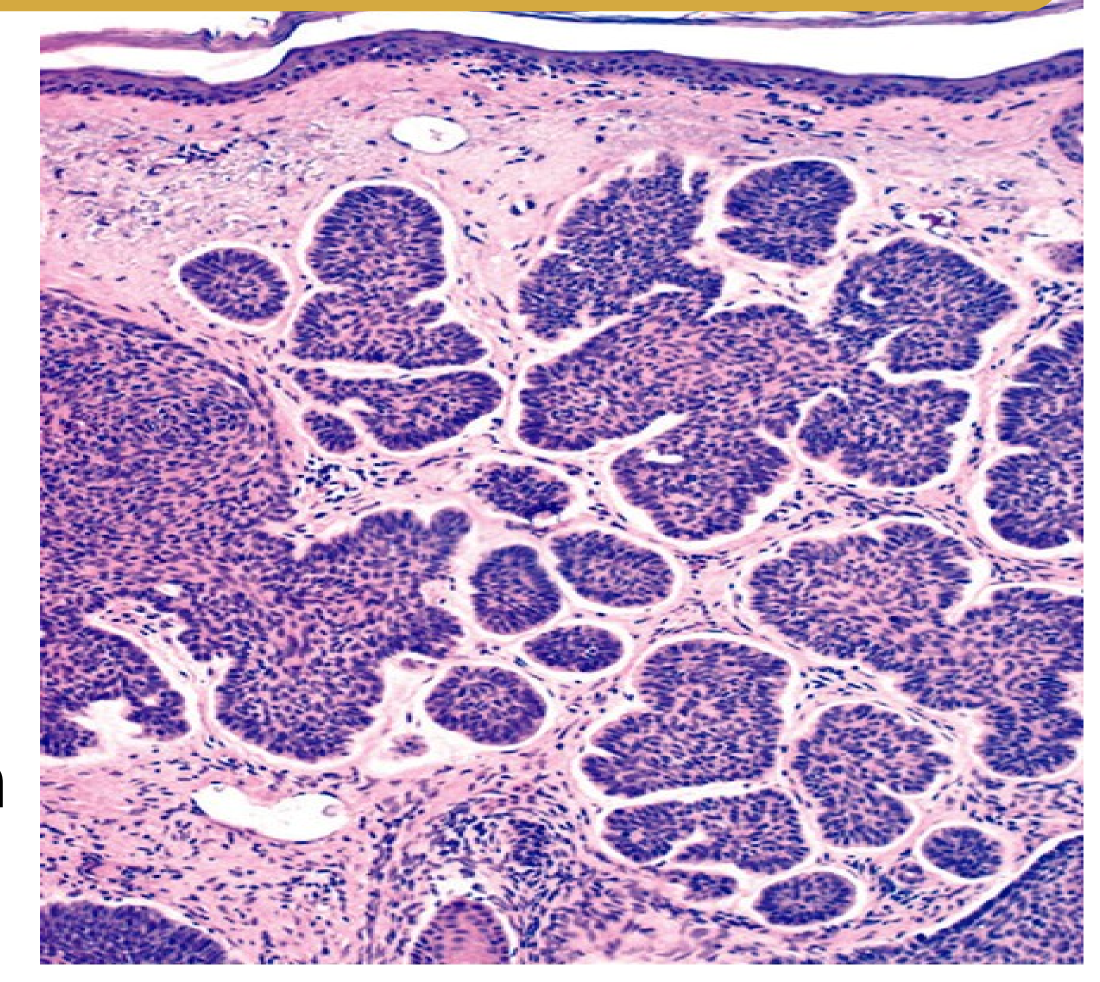
- **Microscopic**:

Masses of malignant epithelial cells infiltrating the dermis

2- The masses are variable in size and shape.

3- The malignant cells are variable in size and shape with scanty bluish cytoplasm, and large, oval , hyperchromatic nuclei.

4-The outer cells are columnar and parallel (palisade arrangement). The



From Cotran RS, Kumar V, Collins T: The skin. In Robbins SL, Cotran RS, Kumar V, eds: Pathologic basis of disease, ed 6, Philadelphia, 1999, WB

Locally malignant tumors of the epidermis



oma

Mass of malignant cells

Outer cells are columnar and parallel

Nuclear palisading

From Cotran RS, Kumar V, Collins T: The skin. In Robbins SL, Cotran RS, Kumar V, eds: Pathologic basis of disease, ed 6, Philadelphia, 1999, WB

https://www.google.com/url?sa=i&source=images&cd=&ved=2ahUKEwjZpcrby57iAhUK6KQKHQanDgcQjhx6BAgBEAM&url=https%3A%2F%2Fslideplayer.com

Discuss pathology of basal cell carcinoma

Basal cell carcinoma is:

A. A tumor of dermis
B. Locally malignant tumor
C. Formed microscopically of cell nests
D. Benign tumor
E. Preneoplastic skin lesion



Malignant tumors of the epidermis



Squamous cell carcinoma

- Malignant tumor that arises from squamous cells (skin or any other organ lined by squamous cells)
- Squamous cell carcinoma is the second most common **tumor of sun-exposed skin** of older individuals
- More in men than in women



Squamous cell carcino

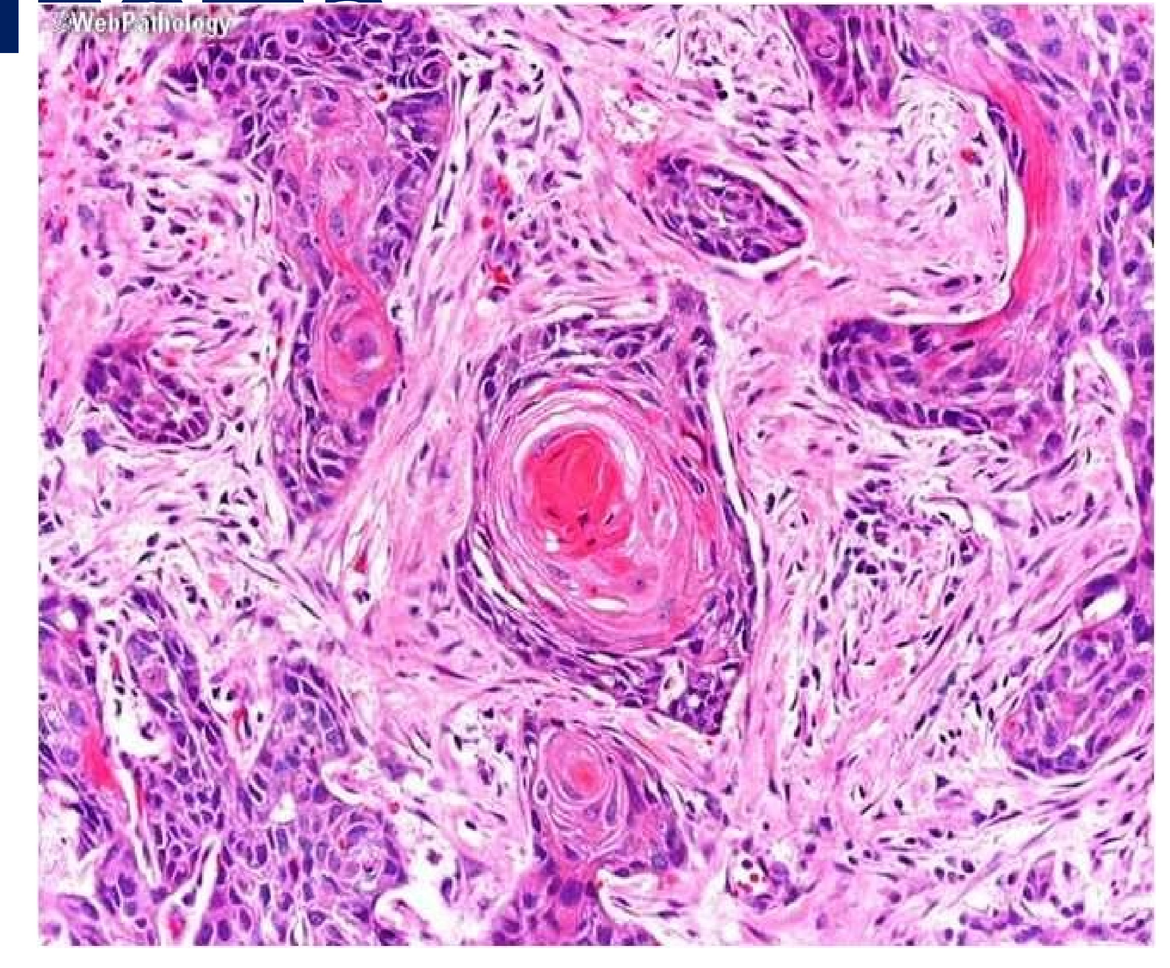


Gross:

- Malignant ulcer with **raised everted edges** and **necrotic floor**

Squamous cell carcinoma



Microscopic:

1. Sheets and masses of malignant squamous epithelial cells infiltrating the dermis
2. The tumor masses show central cells with a red stained keratin pearls (cell nest).
3. The malignant cells are variable in size and shape with abundant pink cytoplasm, and large hyperchromatic nuclei showing prominent nucleoli.



Actinic keratosis

- This is a premalignant dysplastic lesion associated with chronic sun exposure, especially in light-skinned individuals;
- Occurs in older individuals



Tumors of the epidermis



	Squamous cell carcinoma	Basal cell carcinoma (rodent ulcer)
Sites	- Skin - Mucous membranes like esophagus , vagina, cervix, larynx & tongue.	Skin commonly the face above an imaginary line drawn between angle of the mouth & ear lobule.
Predisposing factors	- Prolonged exposure to sun. - Squamous metaplasia & leukoplakia	Prolonged exposure to sun.

	Squamous cell carcinoma	Basal cell carcinoma (rodent ulcer)
Gross picture	-- Ulcerative pattern with raised everted edges and necrotic floor	It starts as red nodule that ulcerate with rolled in edges & raised beaded margin
Microscopic picture	Dermis or submucosa is infiltrated by malignant epithelial cells which in well differentiated pattern form "cell nests".	Dermis is infiltrated by islands of basophilic cells. The nuclei at the periphery of cell islands aligned parallel to each other

True of false

1. **Basal cell carcinoma metastasize to blood**

   (False)

2. **Microscopic picture of squamous cell carcinoma is formed of cell nests infiltrated the dermis**

   (True)

Melanocytic lesions



MELANOCYTES

These are melanin-producing neural crest-derived cells located in the bottom layer (**the stratum basale**) of the skin's epidermis



Melanocytic lesions



Nevus

Congenital or acquired benign neoplasm of melanocytes.

- Gross picture: small **uniformly pigmented** tan to brown papules,
- **Any nevus shows clinical signs of recent changes in size, shape, or color, or bleeding should be excised.**



http://finantempleton.com/patient-information/patient-education/melanocytic-nevi-moles

Melanocytic lesions



Nevus

Nevi mature through characteristic stages:

- **Junctional nevi** (i.e., nests of nevus cells at the dermoepidermal junction) are the earliest lesions.
- **Compound nevi** develop as nests or cords of melanocytes extending into the underlying dermis.
- **Dermal nevi**, the epidermal component is lost.
- As nevus cells enter the dermis they undergo **maturation**, becoming **smaller** and **nonpigmented**.

Melanocytic lesions



Nevus

A B C D

Time

POCKET COMPANION TO ROBBINS AND COTRAN PATHOLOGIC BASIS OF DISEASE eighth edition, 2017, ISBN: 978-1-4160-5454-2 (P590-611)

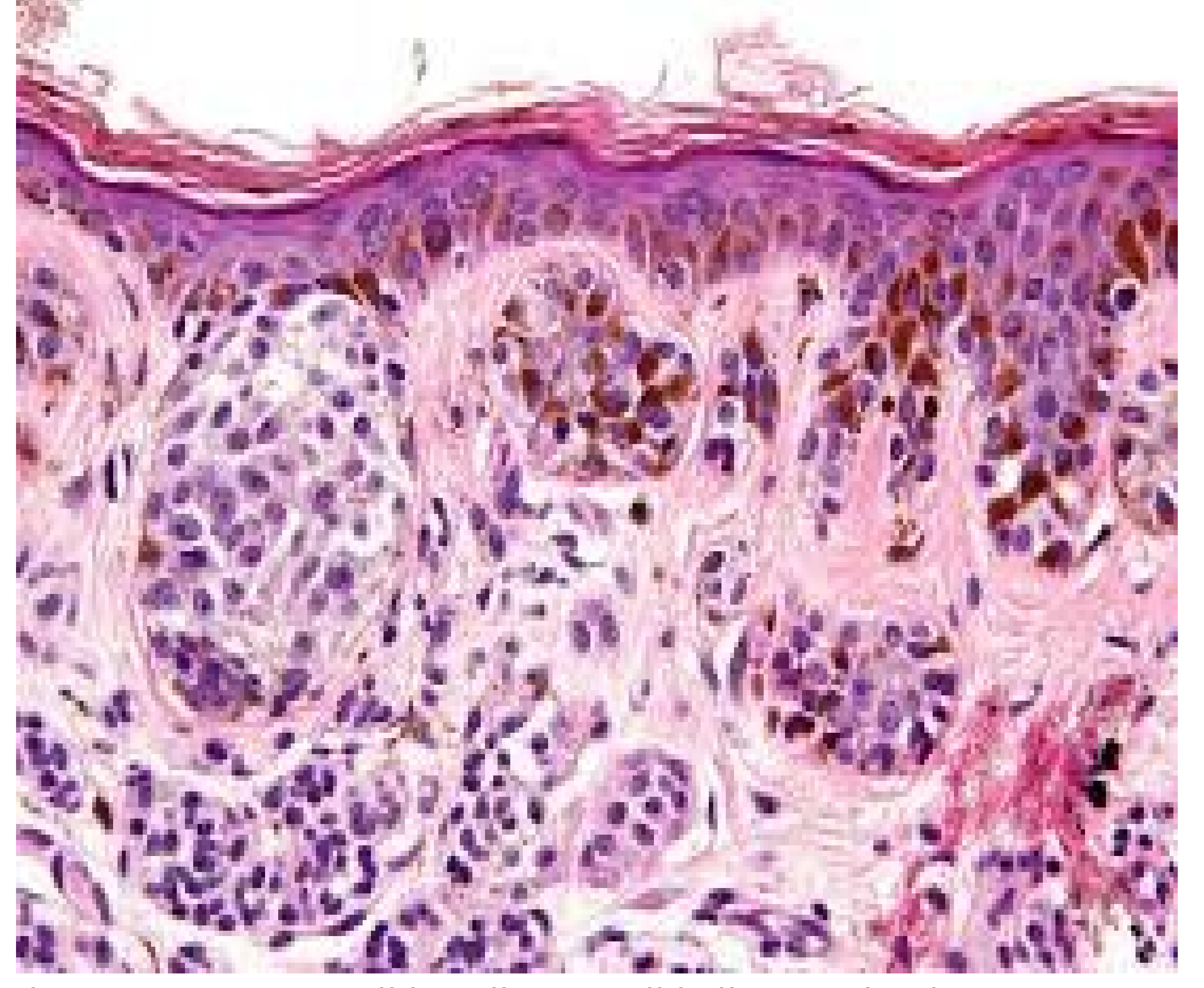
Melanocytic lesions



Nevus

Microscopic picture:

- The nevi are composed of **nests** formed of round to oval cells having uniform and rounded nuclei
- There is variable amount of melanin pigment, **mostly extracellular in the superficial part** of nevus.

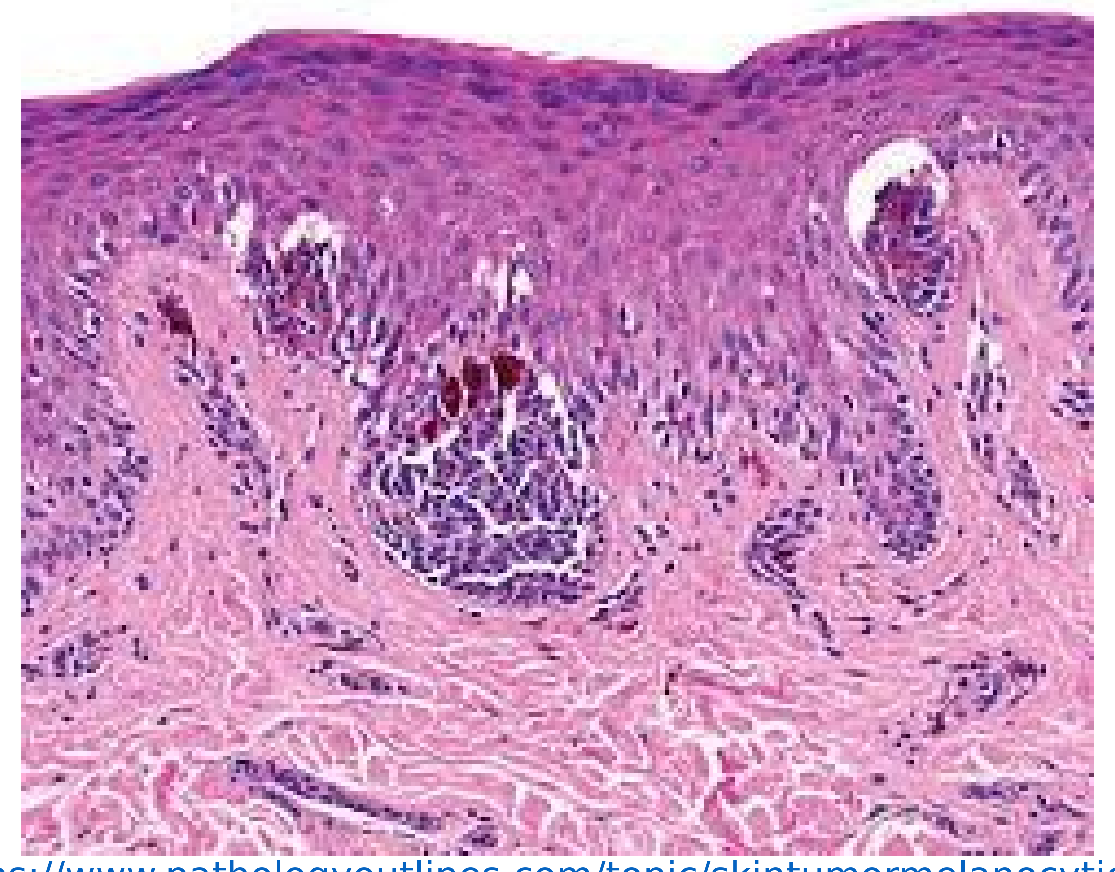


https://commons.wikimedia.org/wiki/File:Dysplastic_nevus_-_very_high_mag.jpg

Melanocytic lesions

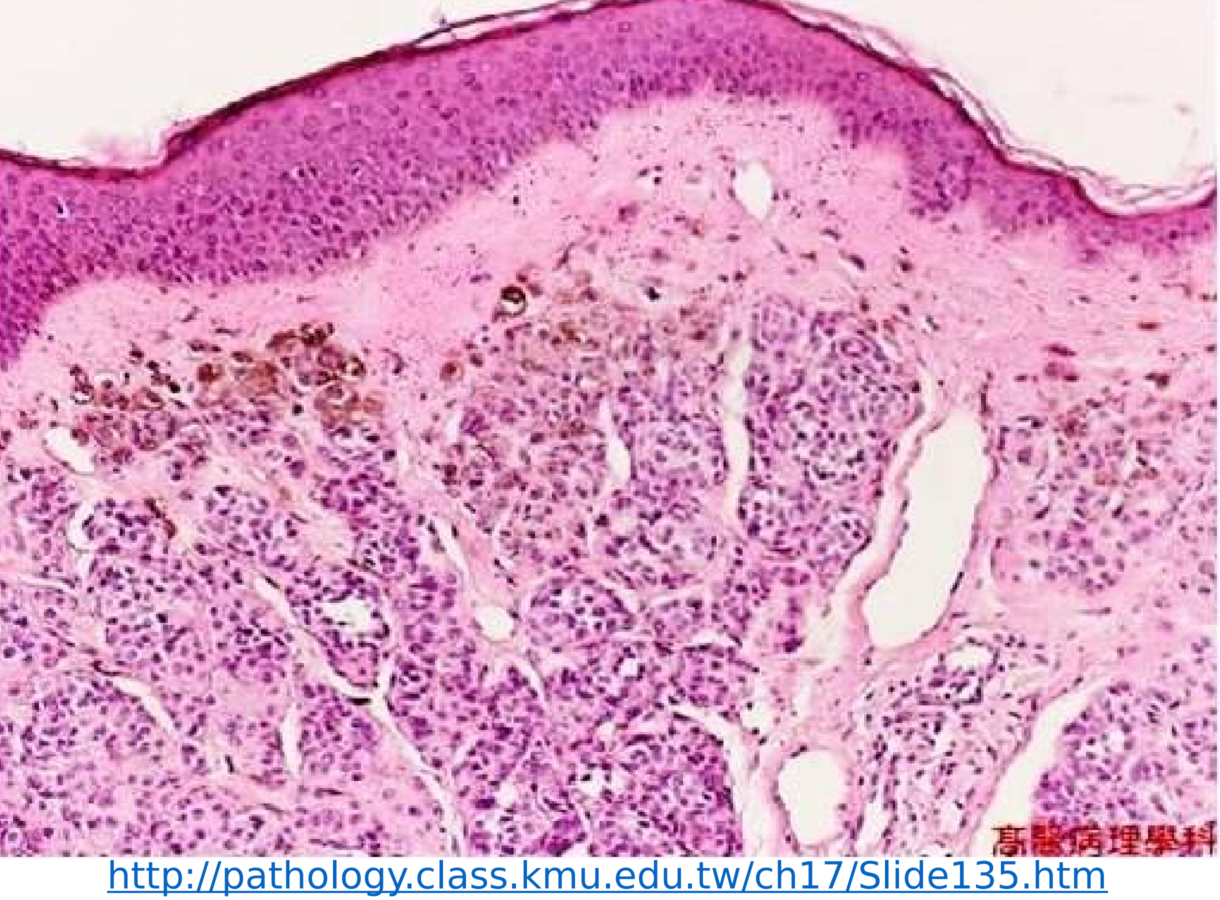


Nevus



https://www.pathologyoutlines.com/topic/skintumormelanocyticJunctnevus.html

Junctional nevus



http://pathology.class.kmu.edu.tw/ch17/Slide135.htm

Dermal nevus

Melanocytic lesions



Nevus

Nevus cells
- **Small, rounded with**
- **rounded nuclei**
- **& scanty cytoplasm**

Nevus cells with intracellular dark brown melanin pigment

Collagen bundles

http://pathology.class.kmu.edu.tw/ch17/Slide135.htm

Quiz



Which of the following describes compound nevus?

A. Nests of nevus cells at the dermoepidermal junction
B. Nests of epidermal melanocytes extending into the underlying dermis
C. Nests of nevus cells in the dermis only
D. Infiltration of the dermis by malignant melanocy
E. Infiltration of the dermis by malignant cell nest

Quiz



Which of the following describes compound nevus?

A. Nests of nevus cells at the dermoepidermal junction
B. Nests of epidermal melanocytes extending into the underlying dermis
C. Nests of nevus cells in the dermis only
D. Infiltration of the dermis by malignant mela
E. Infiltration of the dermis by malignant cell

Melanocytic lesions



Malignant melanoma

It is less common but more fatal than basal or squamous cell carcinoma.

It is related to sun exposure.

More in fair skin persons

- **Sites**: Skin, anogenital surfaces, esophagus, meninges & eye.



https://www.healthline.com/health/cancer/stage-4-melanoma-pictures

Melanocytic lesions



Malignant melanom

- **Gross picture**: Melanomas are **larger** than nevi with **irregular border** and **marked variation in pigmentation** with shades of black, brown, red and dark blue.



http://cancerlink.ru/cancer/oncology/section-9-skin-cancer/34-anoma/

- clinical signs are **recent**



Malignant melanoma

Tumor development shows two phases:

1. **The radial growth phase:** melanoma cells grow **horizontally** within the epidermis **without** invading the basement membrane (The lesion is **flat** clinically), so they do **not** induce angiogenesis or metastases.
2. **The vertical growth phase:** the tumor grows downward into the deeper layer of the dermis (Clinically a **nodule** develops within a previously flat lesion). so they can **send** metastases.

Melanocytic lesions



Malignant melanoma

1. In the horizontal insitu phase:

- Melanoma cells form poorly formed **nests at dermoepidermal junction**
- Single cells & small groups are seen scattered in the upper epidermis

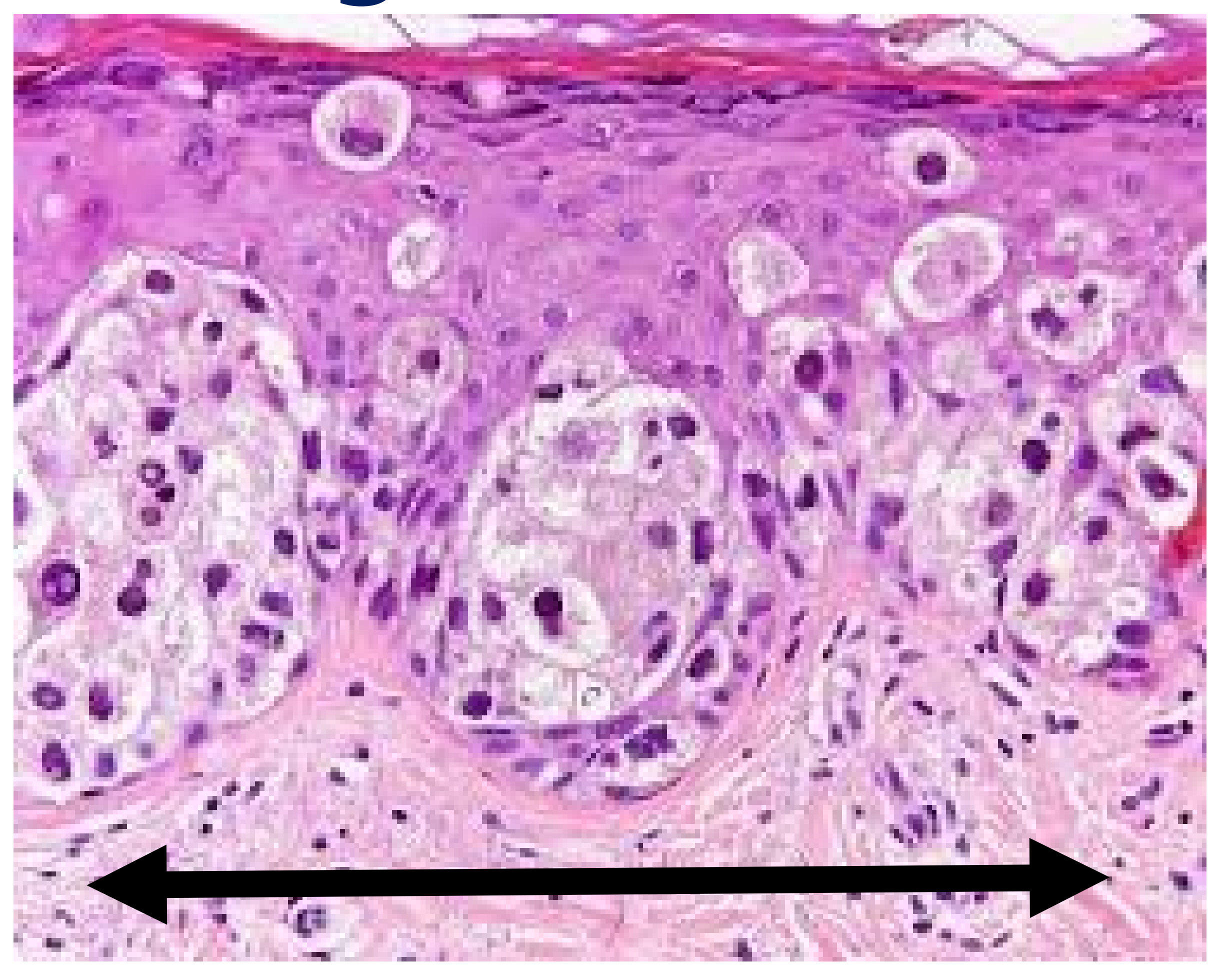
2. In the vertical phase:

- The cells form dermal nodules showing band of lymphocytic infiltrate at its base which reflect host response to tumor antigens
- Melanoma cells may be large rounded cells with large nuclei having **cherry red eosinophilic nucleolus** ***(in the epithelioid appearance)*** *but* the melanoma cells may be spindle *(in the sarcomatous appearance)*

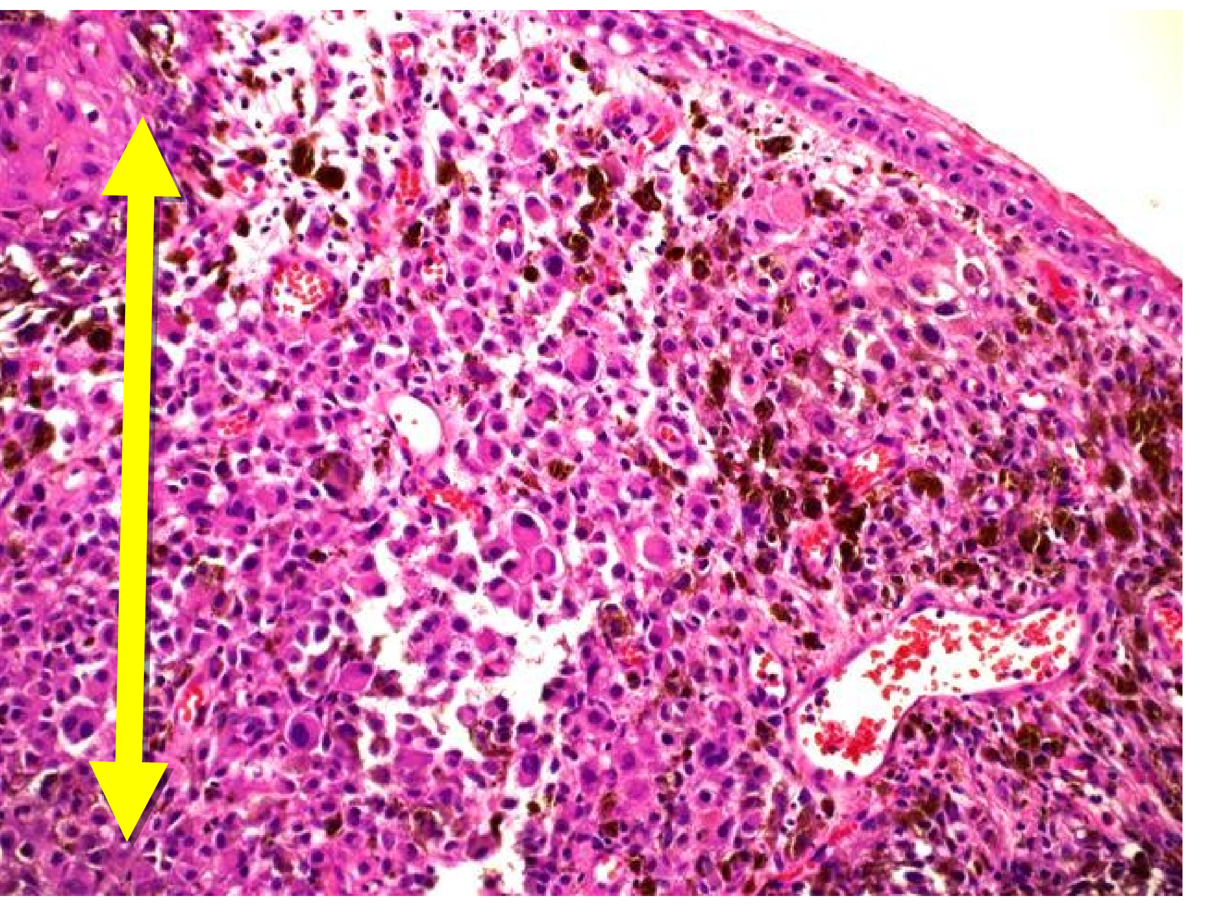
Melanocytic lesions



Malignant melanoma



http://melanocytepathology.com/kickstart-course/classical-cases/melanoma-in-situ



http://www.pathologyoutlines.com/topic/anusmelanoma.html

Melanocytic lesions



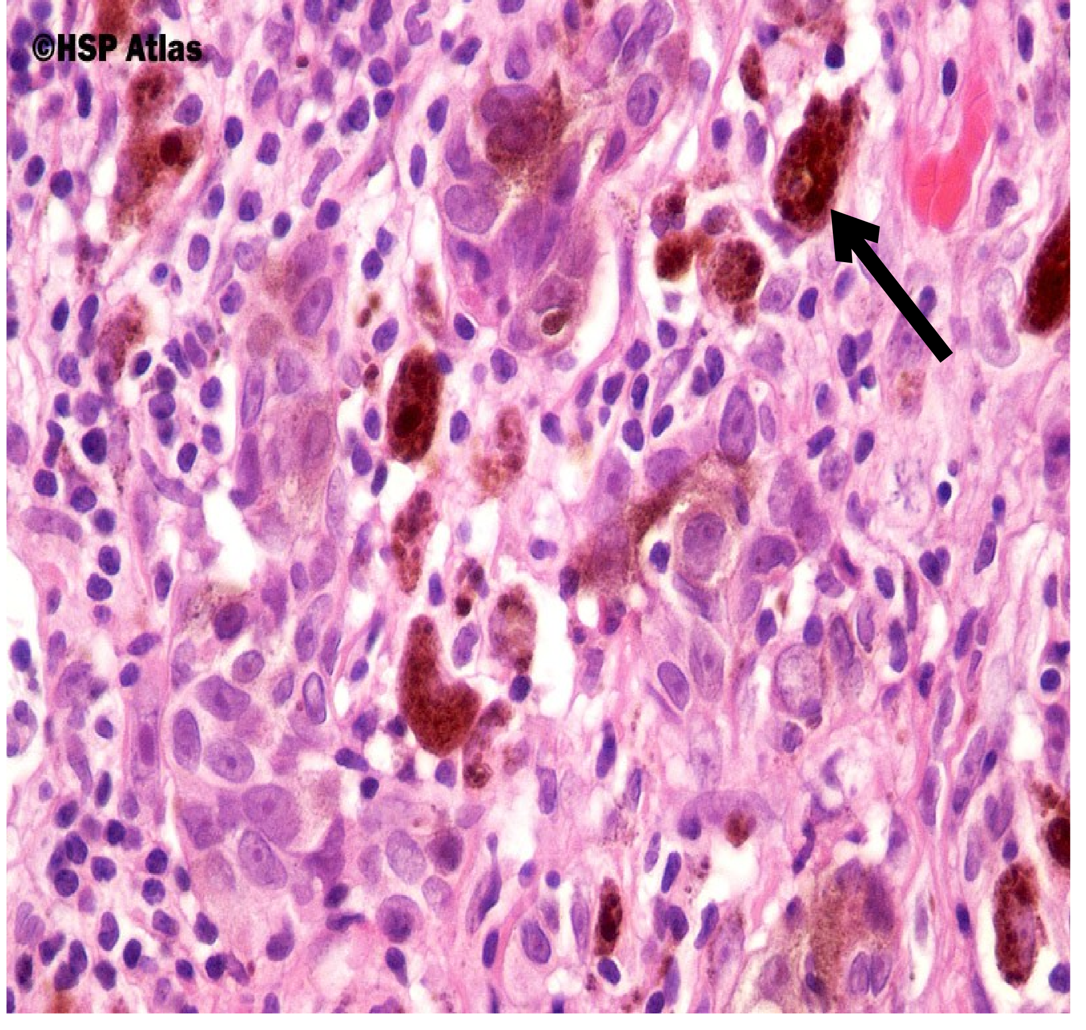
Malignant melanoma

- 1- **Infiltration** of the epidermis and dermis with groups of malignant cells; **rounded, or spindle shaped**
- 2- The malignant cells are large and variable in size and shape having with large hyperchromatic nuclei having **cherry red eosinophilic nucleolus** and cytoplasmic dark brown melanin pigment
- 3- The stroma is scanty and **shows extracellular melanin deposits**

Melanocytic lesions



Malignant melanoma



https://www.webpathology.com/image.asp?case=704&n=18

http://www.patologia.cm.umk.pl/atlas/skin/melanocytic/nodular/index.html

Melanocytic lesions



Malignant melanoma

Behavior:

aggressive tumour with frequent distant metastases.

The probability of metastases is predicted by measuring the depth of invasion.

Quiz



All the following are types of melanocytic lesions except:

A. Dermal nevus
B. Junctional nevus
C. Compound nevus
D. Malignant Melanoma
E. Basal cell carcinoma



Quiz



All the following are types of melanocytic lesions except:

A. Dermal nevus
B. Junctional nevus
C. Compound nevus
D. Malignant Melanoma
E. Basal cell carcinoma



- **Basal cell carcinoma :** is a locally malignant tumor

- **Squamous cell carcinoma :** Malignant tumor that arises from squamous cells (skin or any other organ lined by squamous cells)

- **Actinic keratosis:** is a premalignant dysplastic lesion



- **Nevus:** Congenital or acquired benign neoplasm of melanocytes
- **Melanoma:** is It is less common but more fatal than basal or squamous cell carcinoma.It is related to sun exposure.

- **Melanoma:** Melanoma cells may be large rounded cells with large nuclei having **cherry red eosinophilic nucleolus** (in the **epithelioid** appearance) but the melanoma cells may be **spindle** (in the **sarcomatous** appearance).




Thank you

SUGGESTED TEXTBOOKS



1. Robbins basic pathology, ninth Edition

2. Kaplan step 1 pathology lecture notes 2017 (P.78-98)